

# Mayank Sharma

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## EXPERIENCE

### GNOME | GOOGLE SUMMER OF CODE INTERN

[Report](#)

May 2019 – Aug 2019 | Mentor: Ondřej Holý

- Ported libgdata from (*autotools + make*) to (*meson + ninja*) build system, writing build files to compile and link a shared library consisting of 100+ object files, thereby improving build times by ~40%.
- Developed a new API for libgdata and augmented various operations in GVfs with this API, creating volatile paths to the new entries.
- Developed a regression test-suite for the Google backend in GVfs.
- All the code is open-sourced on GNOME's Gitlab and is planned to make way into GNOME's 3.36 stable release.

### WALMART LABS | SOFTWARE ENGINEERING INTERN

May 2019 – July 2019 | Bengaluru, India

- Worked on the Service Orchestration Layer for Walmart International, to create a one-stop solution for 162 Microservices.
- Developed "mozart-utils", an npm package published to Walmart's in-grown npm repository providing standardized utility functions to over 8 sub-modules in a mono-repo.
- Collaborated with team to develop 20 endpoints, with all 20 being used in production systems for Walmart Mexico.

### EARLYSALARY | SOFTWARE DEVELOPER INTERN

May 2018 – July 2018 | Pune, India

- Implemented centralized Authentication and Authorization, using JumpCloud's Directory-as-a-Service (LDAP).
- Developed Algorithms and APIs, to retrieve and automatically assign a new case to a Pickup Agency based upon its priority in a cluster.

## KEY PROJECTS

### LLC SIDE & COVERT-CHANNEL ATTACKS

IIT Kanpur | Prof. Biswabandan Panda

- Working on mounting a covert channel attack on a victim running on a different core, using the FLUSH + RELOAD attack on L3-cache.
- Developing a side-channel attack on GnuPG, to observe cache accesses to infer the RSA Private Key.

### SECURE KEY-VALUE STORE | SYSTEMS SECURITY

[Code](#)

IIT Kanpur | Prof. Pramod Subramanyam

- Designed and implemented a secure key-value store (in Go) with sharing semantics under the assumption that datastore is malicious.

### IMPROVING SECURITY OF ZOOBAR SERVER

IIT Kanpur | Prof. Pramod Subramanyam

- Exploited overflow, format string, DoS vulnerabilities and crafted browser based attacks followed by fixing bugs and implementing principle of least privileges by separating various processes.

### GEM OS | OPERATING SYSTEM

[Code](#)

IIT Kanpur | Prof. Debadatta Mishra

- Implemented Multi-level paging, signals like SIGINT, SIGSEGV and SIGFPE, exception handlers like page-faults and divide-by-zero and added system calls like expand, shrink, write, sleep, clone, etc.
- Designed a scalable ext-2 like FUSE-based filesystem for GemOS.

## EDUCATION

### IIT KANPUR

BACHELOR OF TECHNOLOGY IN  
COMPUTER SCIENCE

### CHILDREN SR. SEC SCHOOL

AISSCE CLASS XII (CBSE): 92.0%

### CENTRAL ACADEMY SR. SEC SCHOOL

AISSCE CLASS X (CBSE): 10.0/10.0

## ACHIEVEMENTS

- ALL INDIA RANK 630  
JEE ADVANCED 2016
- ALL INDIA RANK 2237  
JEE MAINS 2016
- ALL INDIA RANK 854  
KVPY 2015
- ALL INDIA RANK 1707  
NSTSE 2014

## SKILLS

### PROGRAMMING

C/C++ • Golang • Typescript •  
python • bash • x86 Assembly • Glib

### WEB

libsoup • Node.js • MongoDB  
• Angular 7 • AWS Lambda & EC2

### TOOLS

gdb • Valgrind • memcheck • meson  
• MPICH • Git • Vim • MySQL

## COURSEWORK

- Secure Memory Systems (*i*)
- Security of Critical Infra. (*i*)
- Parallel Computing (*i*)
- Systems & Cyber Security
- Operating Systems
- Blockchain Technology & Applications
- Intro. to Machine Learning
- Database Systems
- Data Structures & Algorithms
- Discrete Mathematics
- Software Engineering